NEW COMBINATIONS AND NEW SPECIES IN AMERICAN VERNONIEAE (ASTERACEAE)

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ABSTRACT

Eleven new combinations are provided in the genera Chresta, Lepidaploa, and Vernonanthura, and eighteen new species are described in Critoniopsis (5), Eremanthus, (1), Hololepis (1), Lepidaploa (8), Lessingianthus (1), Minasia (1), and Stilpnopappus (1).

KEY WORDS: Asteraceae, Vernonieae, Chresta, Critoniopsis, Eremanthus, Hololepis, Lepidaploa, Lessingianthus, Minasia, Stilpnopappus, Vernonanthura, new combinations, new species

Attempts to complete redispositions of American Vernonieae into their appropriate genera have previously led to many transfers of species, including some omitted from other papers (Robinson 1994). Continuing study has revealed the need for the following additional new combinations in the genera *Chresta*, *Lepidaploa*, and *Vernonanthura*. Included are two species placed in *Lepidaploa* which differ from other species in that genus by having pedunculate heads. Nevertheless, these show a relationship to *Lepidaploa* in the characters that seem most important according to present knowledge of the group: detailed pollen structure and shape of raphids in the achene wall.

Also, it seems best to describe some of the most distinctive undescribed species encountered over the last few years so that they can be included in a planned index of American species of Vernonieae. The new species are five *Critoniopsis*, one *Eremanthus*, one *Hololepis*, eight *Lepidaploa*, one *Lessingianthus*, one *Minasia*, and one *Stilpnopappus*.

Chresta pinnatifida (Philipson) H. Rob., comb. nov. BASIONYM: Eremanthus pinnatifidus Philipson, Kew Bull. 1938. 299. 1938.

Lepidaploa almasensis (D.J.N. Hind) H. Rob., comb. nov. BASIONYM: Vernonia almasensis D.J.N. Hind, Kew Bull. 48(2):247. 1993.

The species has the appearance of *Lessingianthus*, with heads single on a long peduncle, but the pollen is Type G and the raphids of the achene wall are elongate.

Lepidaploa chiriquiensis (Keeley) H. Rob., comb. nov. BASIONYM: Vernonia chiriquiensis Keeley, Brittonia 39:45. 1987.

The species is unusual in the genus by its distinctly pedunculate heads, but it is like *Lepidaploa* in every other respect. Pollen Type G.

Lepidaploa pseudaurea (D.J.N. Hind) H. Rob., comb. nov. BASIONYM: Vernonia pseudaurea D.J.N. Hind, Kew Bull. 48(2):251. 1993.

Pollen Type D.

Vernonanthura divaricata (Spreng.) H. Rob., comb. nov. BASIONYM: Conyza divaricata Spreng., Syst. Veg. 3:508. 1826.

An older name for Vernonanthura diffusa (Less.) H. Rob.

- Vernonanthura lindbergii (Baker) H. Rob., comb. nov. BASIONYM: Vernonia lindbergii Baker, Fl. Bras. 6(2):105. 1873.
- Vernonanthura lipeoensis (Cabrera) H. Rob., comb. nov. BASIONYM: Vernonia lipeoensis Cabrera, Darwiniana 18(3-4):418. 1974.
- Vernonanthura nebularum (Cabrera) H. Rob., comb. nov. BASIONYM: Vernonia nebularum Cabrera, Darwiniana 18(3-4):416. 1974.
- Vernonanthura pseudonudiflora (Hieron.) H. Rob., comb. nov. BASIONYM: Vernonia pseudo-nudiflora Hieron., Bot. Jahrb. Syst. 22:703. 1897.

Vernonanthura schulziana (Cabrera) H. Rob., comb. nov. BASIONYM: Vernonia schulziana Cabrera, Darwiniana 6(3):361. 1944.

Vernonanthura vinhae (H. Rob.) H. Rob., comb. nov. BASIONYM: Vernonia vinhae H. Rob., Phytologia 49(5):496. 1981.

Better flowering material of this species has now been seen: BRAZIL. Bahia: municipio de Castro Alves, Serra da Jibóra (= Serra da Pioneira), 12° 51′ 11″ S, 39° 28′ 19″ W, 8 Dec. 1992, Queiroz, Mayo, Nadruz, Sena, & Guedes 2944 (NY).

The following new species have been set aside during recent years from various specimens sent for identification. Among the specimens are many collected by Gert Hatschbach of Museo Botânico Municipal of Curitiba, Brazil, and three of the following new species are named for him. Other collectors after whom new species are named are indicated below. Measurements of pollen are all in Hoyer's solution.

Critoniopsis choquetangensis H. Rob., spec. nov. TYPE: BOLIVIA. La Paz: Inquisivi, comunidad Choquetanga - Aguas Calientes - Calachaca, cuenca del río Calahura, pequeño valle, 9 km de Choquetanga, 16° 48′ S, 67° 19′ W, 3400 m, 20 Julio 1994, N. Salinas 3187 (HOLOTYPE: US; Isotype: LPB). PARATYPES: BOLIVIA. La Paz: Inquivisi, "Valle de Chimu", on slopes W of the Pavionani Fork of the Río Chimu, 1-3 km NW of Estancia Chimu, 7 km NE of Choquetanga, 16° 48′ S, 67° 16′ W, 2900-3200 m, 14 April 1991, Lewis 38677 (LPB,MO,US).

Plantae arborescentes e basi ramosae ad 10 m altae; caules dense patentiter fulvo-tomentosi. Folia alterna, petiolis 3.5-4.0 cm longis tomentosis; laminae ellipticae 12-23 cm longae 4.5-8.5 cm latae base breviter acutae margine remote argute serrulatae apice acute vel breviter acuminatae supra rugulosae minute puberulae subtus dense sordide vel fulve tomentosae in nervis fulviorious, nervis secundariis ca. 45° patentibus utrinque ca. 12, nervulis reticulatoexsculpatis. Inflorescentiae terminales late corymboso-cymosae ad 12 cm altae et 19 cm latae in ramis dense corymbosae in ramulis glomerulatae. Capitula ca. 1 cm alta; involucrae ca. 3 mm latae; bracteae involucri 17-20 imbricatae ca. 4seriatae appressae 1-5 mm longae 1.5-1.8 mm latae apice acutae extus puberulae vel leniter tomentellae. Flores 3 in capitulo; corollae lilaceae ca. 8 mm longae extus plerumque glabrae, tubis 4.5-5.0 mm longis, faucibus ca. 0.5 mm longis sparse glandulo-punctatis, lobis 4.0-4.5 mm longis ca. 0.5 mm latis leniter contortis vel leniter revolutis apice dense glandulo-punctatae; thecae antherarum ca. 2.5 mm longae base distincte caudatae fimbriate dentatae; appendices apicales ca. 0.5 mm longae 0.28 mm latae in parietibus cellarum leniter ornatae. Achenia (submatura) ca. 2.5 mm longa plerumque glabra base et apice glandulo-punctatae, raphidis acheniorum obscuris, raphidis ovularum clongatis; setae pappi albae persistentes ca. 7 mm longae longiores apice sensim latiores. Grana pollinis in diametro 40-42 µm, typi A.

Critoniopsis chaquetangensis is most distinct in the large elliptical leaves, rugulose above and brownish tomentose below, and in the densely corymbose inflorescence. The species was first obtained in young bud and put aside. The more recent collection is in full anthesis. The type was cited from mercia de bosque y áreas de pastoreo. The paratype is cited from forests to 20 m high with a distinct understory layer, Weinmannia often dominant, with numerous mid-layer Miconia trees. Clusia and Rerberis are also common.

Critoniopsis gynoxiifolia H. Rob., spec. nov. TYPE: PERU. Cusco: Paucartambo, Alturas de Pucará, Challabamba, Parque Nacional Manu, elev. 3450-3500 m, bosque en quebrada con predominio de Weinmannia, escaso, 12 Sept. 1990, A. Cano E. 4343 (HOLOTYPE: US; Isotype: USM).

Plantae fruticosae 3-4 m altae mediocriter ramosae; caules appresse cinereotomentelli veteres incrassati juvenes sulcati, internodis 3-8 cm longis. Folia alterna, petiolis ca. 1.2 cm longis; laminae subcoriaceae oblongo-lanceolatae 5-10 cm longae 2.2-3.0 cm latae base rotundatae margine integrae anguste reflexae apice breviter acutae supra glabrae in nervis primariis et secundariis insculptae in nervulis minute reticulate exsculptae subtus dense sordide lanatae, lanis nervis secundariis et nervulis occultantibus, nervis primariis subtus valde exsculptis bisulcatis, nervis secundariis utrinque ca. 18 plerumque recte patentibus vix arcuatis. Inflorescentiae in ramis foliosis terminales dense corymbiformes, ramis sulcatis dense sordide tomentellis, pedunculis 0-2 mm longis. Capitula late campanulata ca. 1.5 cm alta superne sensim 1.2-1.5 cm lata; squamae involucri ca. 25 subimbricatae ca. 4-seriatae ovatae vel lanceolatae 3-7 mm longae 2.5-1.5 mm latae apice breviter acutae vel acutae exteriores extus sordide tomentellae interiores distaliter atrescentes et minute puberulae. Flores ca. 7 in capitulo; corollae lilaceae ca. 9 mm longae plerumque glabrae, tubis ca. 4.5 mm longis, faucibus 1.5 mm longis, lobis 3.5 mm longis et 0.65 mm latis distaliter pauce glandulo-punctatis; thecae antherarum ca. 3 mm longae base longe caudatae fimbriate denticulatae; appendices apicales antherarum 0.55 mm longae 0.28 mm latae. Achenia ca. 4 mm longa pauce glandulifera, raphidis brevibus; setae pappi albae ca. 8 mm longae apice leniter latiores; setae exteriores similares sed breviores 3-4 mm longae. Grana pollinis in diametro ca. 42 µm typi A.

The new species is named for the remarkable Gynoyxs-like leaves. Relationship may be closest to Critoniopsis peruviana (Cuatr.) H. Rob., but the leaves of the latter have mostly ascending, arching secondary veins and much shorter pubescence on the undersurface that does not hide the network of raised veinlets. The heads of C. peruviana are smaller with only 4 or 5 florets.

Critoniopsis jaramilloi J. Pruski & H. Rob., spec. nov. TYPE: ECUADOR. Azuay: Carretera Cuenca - San Joaquín - Angas, S de Cuenca, colecciones entre Bayán y Hcda. Pucán, vegetación de bosque secundario y potreros, suelo humífero, 30 Julio 1983, J. Jaramillo & Winnerskjold 5389 (HOLOTYPE: US; Isotype: NY).

Plantae frutescentes ad 2 m altae, mediocriter ramosae; caules dense sordide tomentelli. Folia alterna, petiolis 5-9 mm longis; laminae subcoriaceae ellipticae 3-6 cm longae 1.4-2.8 cm latae base et apice obtusae vel breviter acutae margine integrae leniter undulatae supra glabrae sublaeves subtus dense sordide tomentellae, nervis secundariis ad 45°-55° patentibus utrinque 6-8, nervis et nervulis subtus exsculptis. Inflorescentiae in axilles superiores et terminaliter dispositae in ramis laxe cymosae, pedunculis 3-14 mm longis. Capitula 9-10 mm alta; squamae involucri 60-70 subimbricatae ca. 7-seriatae juvenales erecto-patentes ovatae vel oblongae 0.5-5.5 mm longae 1.0-1.5 mm latae apice breviter acutae extus glabrae distaliter leniter tomentellae. Flores ca. 12 in capitulo; corollae albae ca. 7 mm longae extus sparce glanduliferae; glandulis cylindricis, tubis ca. 4 mm longis, faucibus ca. 1 mm longis, lobis 2.0-2.5 mm longis revolutis; thecae antherarum ca. 2.3 mm longae base breviter inornate caudatae, appendices apicales ovatae ca. 0.6 mm longae 0.3 mm latae in parietibus cellularum leniter ornatae. Achenia ca. 3 mm longa extus breviter setulifera sparce glandulifera dense idioblastifera; setae pappi albae facile deciduae ca. 5 mm longae distaliter leniter latiores. Grana pollinis in diametro ca. 40 µm, typi A.

The species is named for the first collector, Jaime L. Jaramillo, of the Herbario QCA, Pontificia Universidad Católica del Ecuador. The specimen was first recognized as a new species by J. Pruski who furnished the material for description and inclusion in this report.

The new species is distinctive in the rather large number of florets in the heads and in the many rows of involucral bracts. Although some species of *Critoniopsis* have over 20 florets, most have eight or fewer. The lower four to five rows of involucral bracts are strongly spreading in the young buds.

Critoniopsis thomasii H. Rob., spec. nov. TYPE: HONDURAS. Corrayagua: Both sides of Agua Amarilla stream, nuclear zone of the Azul Meambar National Park, 10.5 km east of Lago Yojoa, 14° 48′ N, 87° 52′ W, 1740 m, 1½ March 1993, N. Thomas 571 (HOLOTYPE: MO; Isotypes: EAP, HEH, TEFH).

Plantae volubiles in arboris ad 10 m altae; caulis dense stellato-pubescentes in nodis non vel minime deflecti. Folia alternata, petiolis 4-6 mm longis; laminae chartaceae ellipticae plerumque 2.5-4.5 cm longae 1-2 cm latae base et apice obtusae vel breviter acutae margine integrae supra persparse pilosulae subtus stellato-pubescentes et glandulo-punctatae, nervis secundariis obscuris utrinque 5 vel 6. Inflorescentiae in ramis foliosis terminales pyramidaliter thyrsoideae, ramis recte patentibus, ramis inferioribus longioribus thyrsoideis, pedunculis brevibus vel nullis. Capitula in glomerulis subdensis congesta ca.

8 mm alta ca. 3 mm lata, bracteae involucri ca. 24 imbricatae gradatim 5senatae ovatae vel anguste ovatae 1-4 mm longae ad 1.5 mm latae apice acutae nigrescentiores extus plerumque glabrae. Flores ca. 3 in capitulo; corollae albae 6 mm longae plerumque glabrae, tubis ca. 3 mm longis, faucibus ca. 1.5 mm longis, lobis ca. 1.5 mm longis distaliter minute glanduliferis, thecae antherarum 1.9 mm longae base distincte breviter in cellulis leniter ornate fimbriatae, appendices apicales ca. 0.45 mm longae 0.22 mm latae. Achenia submatura ca. 2 mm longa ca. 8-costata dense breviter setulifera; setae pappis albae ca. 4.5 mm longae apice leniter latiores et scabridiores. Grana pollinis in diametro ca. 40 µm, typi A.

The species is named for the collector, Hawkins Thomas. The specimen is cited from moist hardwood cloud forest. The species keys to Critoniopsis oolepis (S.F. Blake) H. Rob. (as Vernonia) in the key to Vernonia sect. Eremosis by Jones (1973). The new species has lateral branches in the inflorescence similarly short and spreading at nearly right angles, but the lower branches are longer instead of shorter than the upper branches and the inflorescence shape is thus more pyramidal than cylindrical. The Blake species of Yucatán also has denser pubescence on the leaf undersurfaces and its achenes are nearly glabrous.

Critoniopsis zarucchii H. Rob., spec. nov. TYPE: COLOMBIA. Antioquia: Mpio. de Yarumai, ca. 5 km WSW of Yarumai just W of El Peñol, 6° 57' N, 75° 28' W, 2420 m, margin of disturbed forest, 30 Nov. 1986, Zarucchi & Cárdenas 4374 (HOLOTYPE: US; Isotype: MO).

Plantae fruticosae scandentes mediocriter ramosae; caules evanescentiter sordide granulo-hirtelli. Folia alterna, petiolis 0.5-0.9 cm longis; laminae chartaceae ellipticae 6-10 cm longae 1.5-2.7 cm latae base cuneatae margine superne remote serrulatae apice anguste acuminatae supra glabrae minute alveolatae subtus pallidius virides minute glandulo-punctatae in nervis puberulae, nervis secundariis utringue ca. 7 ascendentiter arcuatae. Inflorescentiae in ramis foliosis terminales in nodis deflectae, ramulis divaricate cymosae. Capitula in glomerulis sessilia vel subsessilia anguste campanulata 7-8 mm alta 3-4 mm lata; bracteae involucri ovatae vel oblongae 1-3 mm longae 0.5-1.0 mm latae apice obtusae interiores base vix contractae et reflexae omnino extus in partibus expositiores sericeo- vel tomentello-puberulae. Flores 3 in capitulo; corollae lilaceae? ca. 5.5 mm longae plerumque glabrae, tubis ca. 3 mm longis, faucibus ca. 0.3 mm longis, lobis ca. 2.2 mm longis 0.5 mm latis apice extus pauce glandulo-punctatis; thecae antherarum ca. 1.7 mm longae base breviter denticulate caudatae; appendices apicales antherarum oblongo-ovatae 0.3 mm longae 0.2 mm latae. Achenia ca. 2 mm longa glabra idioblastifera, raphidis obscuris; setae pappi albae apice distincte lateriores; squamae exteriores lineares 1.0-1.8 mm longae. Grana pollinis in diametro ca. 38 µm, typi A.

The species is named for the first collector, James L. Zarucchi.

Critoniopsis zarucchii was originally determined by the author as C. lindenii Sch.-Bip., to which it seems related. The new species is most distinct in the strongly acuminate and remotely serrulate leaf tips. The leaf undersurface is more nearly glabrous than in related species. The outer series of the pappus is unusually long for a squamose form. The flowers were described by the collector as cream-colored, but the plant is almost entirely past anthesis.

Eremanthus hatschbachii H. Rob., spec. nov. TYPE: BRAZIL. Bahia: Mun. Mucugê, Serra do Cabeludo, 16 Sept. 1984, Hatschbach 48277 (HOLOTYPE: MBM; Isotype: US).

Plantae frutescentes 1.8 m altae, mediocriter ramosae; caules dense appresse tomentosi, pilis stellatis. Folia alterna, petiolis brevibus 0.5-1.0 mm longis; laminae coriaceae ovatae 0.9-1.5 cm longae 0.7-1.1 cm latae base rotundatae margine integrae apice obtusae vel breviter acutae supra glabrae subtus dense appresse albo-tomentosae, pilis stellatis. Inflorescentiae terminales dense late corymboso-cymosae, bracteis subcapituli minute foliiformibus ca. 4 mm longis, pedunculis 0-1 mm longis. Capitula ca 1 cm alta 2 mm lata; bracteae involucri ca. 20 gradatim ca. 5-seriatae oblongae vel ellipticae 1-4 mm longae ca. 1 mm latae apice anguste rotundatae extus distaliter dense tomentellae; flores 2 vel 3 in capitulo; corollae lilaceae ca. 5 mm longae, tubis ca. 1.5 mm longis, faucibus ca. 1 mm longis, lobis ca. 2.5 mm longis extus glandulo-punctatis; thecae antherarum ca. 2 mm longae base minime fimbriatae; appendices antherarum apicales ca. 0.6 mm longae anguste triangulares. Achenia ca. 3.2 mm longa glabra; setae pappi albae perfacile deciduae filiformiter taeniatae ca. 5 mm longae. Grana pollinis in diametro ca. 42 µm, typi A.

The species is superficially most similar to *Eremanthus rondoniensis* MacLeish & Schumacher is the small size of the leaves, but that species from the interior of Brazil and eastern Bolivia has single-flowered heads and achenes that are sericeous at the base.

Hololepis hatschbachii H. Rob., spec. nov. TYPE: BRAZIL. Espirito Santo: São Bento de Urânia, rodovia para Castelinho (mun. Alfredo Chaves), alt. 1100 m, Hatschbach & Silva 61125 (HOLOTYPE: MBM; Isotype: US).

Plantae frutescentes; caules in parte flexuosi minute lepidoti, pilosis T-formibus, internodis ca. 5 mm longis. Folia alterna, petiolis ca. 1.5 cm longis; laminae ellipticae vel obovatae subcoriaceae 10-12 cm longae 3-4 cm latae base et apice breviter acuminatae margine integrae anguste reflexae supra glabrae minute glandulo-punctatae subtus dense albo-lepidotae, pilis T-formibus. Inflorescentiae axillaribus in pedunculis angustis flexuosis monocephalae. Capitula late campanulata ca. 1.8 cm alta et 2 cm lata; bracteae subinvolucri ca. 8 foliiformis lineares vel ellipticae 1.2-2.0 cm longae 2.5-4.0 mm latae subtus albo-lepidotae; bracteae involucri ca. 30 subimbricatae ca. 4-seriatae late ovatae

et oblongae vel anguste oblongae 1.5-10.0 mm longae 1.5-2.5 mm latae apice breviter acutae extus sparse appresse T-formiter pilosulae. Floribus ca. 30 in capitulo; corollae lilaceae 8.5 mm longae; tubis ca. 1 mm longis, faucibus ca. 1 mm longis, lobis ca. 6.5 mm longis distaliter in pilis T-formibus tomentellis; thecae antherarum ca. 4 mm longae base breviter fimbriatae, appendices antherarum apicales lanceolatae ca. 1 mm longae. Achenia ca. 5 mm longa; setae pappi roseo-tinctae filiformes ad 9 mm longae exteriores irregulariter breviores. Grana pollinis in diametro ca. 50 µm, typi A.

The species is similar to Hololepis pedunculata (DC. ex Pers.) DC. of Minas Gerais, but the plant is generally smaller with narrower, more flexuous peduncles, smaller heads, scarcely developed tails on the anther thecae and reddish pappus bristles.

Lepidaploa araujoa H. Rob., spec. nov. TYPE: BRAZIL. Rio de Janeiro: Mun. de Macaé, 1.7 km da Lagoa Comprida em direção Carapebus, atrás do 1° cordão em depreeão, heliófila; crescendo nas moitas, 6 Apr. 1983, Araujo 5538 & Casari (HOLOTYPE: GUA; Isotype: US). PARATYPE: BRAZIL. Rio de Janeiro: Mun. de Macaé, entre Lagoa Comprida e Cabiúnas, "restinga de Ericaceae", heliófilo, frequente, 7 Apr. 1982, Araujo 4900 & Henriques (US).

Plantae fruticosae ad 0.7 m altae mediocriter ramosae; caules subtiliter pentangulares dense sericei, pilis T-formibus. Folia alterna, petiolis indistinctis ad 2 mm longis; laminae lineares 2.0-3.5 cm longae 2-4 mm latae base anguste cuneatae margine integrae anguste reflexae apice acutae supra et subtus sericeae subtus densius et glandulo-punctatae, pilis T-formibus, solum nervis primariis distinctis. Inflorescentiae in ramis foliosis terminales, ramis seriate cymosis, internodis brevibus, bracteolis foliiformis linearibus ca. 1 cm longis. Capitula sessilia late campanulata 5-7 mm alta ca. 7 mm lata; bracteae involucri ca. 20 subimbricatae ca. 3-seriatae subulatae vel anguste oblongae 1.5-4.0 mm longae exteriores apice acuminatae plerumque appressae interiores acutae omnino extus sordide puberulae. Flores 18-20 in capitulo; corollae rosaceae ca. 6.5 mm longae, tubis ca. 3 mm longis extus glabris, faucibus ca. 1 mm longis, lobis ca. 2.5 mm longis 0.35 mm latis extus omnino sericeopilosis distaliter glandulo-punctatis, pilis plerumque propre basem ramulosis; thecae antherarum ca. 1.6 mm longae base breviter caudatae; appendices apicales antherarum ca. 0.5 mm longae 0.18 mm latae. Achenia submatura ca. 1 mm longa dense sericeo-setulifera idioblastifera, raphidis elongatis; setae pappi ca. 3.5 mm longae apice vix vel non lateriores; squamae exteriores setiformes ca. 0.5 mm longae. Grana pollinis in diametro ca. 40 µm, typi C.

The species is named after the collector of both specimens, Dorothy Araujo, of Rio de Janeiro.

Lepidaploa araujoa seems to have escaped description because of its unremarkable appearance with linear leaves, small shrubby habit, and small heads. The species is unusual in the density of slightly T-shaped hairs on the corolla lobes and upper throat.

Basal appendages on the anther thecae, of the type seen in L. araujoa, seem rare in Lepidaploa.

Lepidaploa bahiana H. Rob., spec. nov. TYPE: BRAZIL. Bahia: Mun. de Palmeiras, Morro do Pai Inácio, ca. 1000 msm, 12° 27′ 4″ S, 41° 38′ 15″ W, campo rupestre, 12 Oct. 1987, Queiroz, et al. 1987 (HOLOTYPE: NY). PARATYPE: BRAZIL. Bahia: Lençois, Morro do Pai Inácio, 12° 34′ S, 41° 23′ W, Oct. 1982, Bastos Lobo 35 (US).

Plantae suffrutescentes ad 1.5 m altae non vel inferne ramosae; caules valde 5-angulares distincte ochraceo-glandulo-punctatae sparce pilosi, pilis Tformibus. Folia alterna, petiolis 0.3-1.0 cm longis; laminae membranaceae vel chartaceae anguste ovatae vel ellipticae plerumque 3-6 cm longae 0.7-1.7 cm latae base acuminatae margine serratae apice acute vel breviter acuminatae supra et subtus dense ochraceo-glandulo-punctatae supra appresse pilosulae subtus pallidiores plerumque in nervis puberulae, pilis adaxialibus T-formibus, nervis secundariis utringue 7-9 ascendentiter arcuatis. Inflorescentiae in ramis prolongatis decrescente foliatis terminales laxe arcuate ramosae, ramis seriatocymosis in nodis leniter deflectis, internodis costatis. Capitula sessilia late campanulata 6-7 mm alta et lata; bracteae involucri 30-35 subimbricatae ca. 3seriatae subulatae vel oblongo-lanceolatae 1.5-4.5 mm longae 0.7-1.2 mm latae apice acutae exteriores pungentiores extus glandulo-punctatae et appresse pilosulae, pilis T-formibus. Flores ca. 20 in capitulo; corollae lilaceae ca. 6.5 mm longae extus glandulo-punctatae in apicem lobarum densius glanduliferae. tubis ca. 2.5 mm longis, faucibus ca. 1 mm longis, lobis ca. 2 mm longis ca. 0.4 mm latis extus sericeo-pilosulis; thecae antherarum ca. 2 mm longae base breviter caudatae; appendices apicales antherarum ca. 0.45 mm longae 0.2 mm latae. Achenia ca. 1.5 mm longa sericeo-setulifera et idoblastifera inter costal ochraceo-glandulifera, raphidis elongatis; setae pappi albae ca. 4 mm longae apice vix lateriores; squamae exteriores ca. I mm longae. Grana pollinis in diametro ca. 40 µm, typi C.

Lepidaploa bahiana is most notable for the densely reddish glandular punctation of the stems, leaves, and inflorescence parts. The inflorescence is borne on a prolonged branch with reduced leaves.

Lepidaploa davidsmithii H. Rob., spec. nov. TYPE: PERU. San Martín: Prov. Rioja, Pedro Ruíz - Moyobamba road, km 368, Campamento García, 5° 45′ S, 77° 43′ W, 2200 m, pajonal vegetation, due to exposure and poor soil on ridges, 14 Aug. 1983, D.N. Smith 4804 (HOLOTYPE: US; Isotype: MO).

Plantae reclinatae mediocriter ramosae; caules rufo-velutini. Folia alterna, petiolis 0.7-1.5 cm longis; laminae subcoriaceae anguste ovatae vel lanceolatae 4.5-12.5 cm longae 2.0-3.2 cm latae base obtusae vel breviter acutae margine

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integrae apice anguste acutae supra tenuiter puberulae in nervis et nervulis leniter insculptae subtus rufo-lanulatae; nervis secundariis utrinque ca. 10 leniter ascendentiter arcuatis. Inflorescentiae mediocriter ramosae, ramis seriate cymosae, internodis fulvo-velutinis, bracteolis foliiformibus oblongis 8-11 mm longis 4-5 mm latis. Capitula sessilia in nodis 1-3 campanulata 8-9 mm alta ca. 4 mm lata; squamae involucri ca. 35 subimbricatae appressae extus sericeo-tomentellae ovatae vel anguste oblongo-lanceolatae 1-5 mm longae 0.5-1.2 mm latae exteriores apice argute acutae interiores apice breviter acutae et breviter acuminatae vix rubro-tinctae. Flores ca. 10 in capitulo; corollae violaceae 7.0-7.5 mm longae extus plerumque glabrae, tubis 3.5-4.0 mm longis, faucibus ca. 0.5 mm longis, lobis ca. 3.5 mm longis ca. 0.5 mm latis solum in apicem extus spiculiferis; thecae antherarum ca. 2.2 mm longae; appendices antherarum apicales ovatae ca. 0.3 mm longae 0.2 mm latae. Achenia ca. 2.8 mm longa dense sericeo-setulifera dense idioblastifera base pauce glandulifera, raphidis elongatis; setae pappi albae ca. 5.5 mm longae apice leniter latiores; squamae exteriores ca. 1 mm longae. Grana pollinis in diametro 40-42 µm, typi C.

The species is named for the collector, the late David Smith, who collected

extensively for the Missouri Botanical Garden in Perú and Bolivia.

Lepidaploa davidsmithii is generally similar to other members of the widespread group of andean Lepidaploa having Type C pollen. It is distinct in the lanulose undersurfaces of the leaves, the laxly arching branches of the inflorescence with heads often grouped at the nodes, the heads having only about 10 florets and the pappus being white.

Lepidaploa juruenensis H. Rob., spec. nov. TYPE: BRAZIL. Mato Grosso: Río Juruena, margem direita da Cachoeira, Salto Augusto, na fenda das pedras, 28 May 1977, Rosa & Santos 2027 (HOLOTYPE: US; Isotypes: MG?,NY).

Plantae herbaceae annuae? ad 30 cm altae vix ramosae; caules strigulosi. Folia alterna linearia 2.0-3.5 cm longa margine anguste reflexa ca. 1 mm lata supra sparce minute sericea subtus dense albo-strigosa, nervis primariis solum distinctis. Inflorescentiae terminales pauce ramosae in nodis leniter deflexae, pedunculis tenuibus 3-12 mm longis. Capitula anguste campanulata ca. 10 mm alta 5-6 mm lata; bracteae involucri ca. 40 subimbricatae ca. 4-seriatae lanceolatae 1.5-6.0 mm longae 0.3-1.0 mm latae apice anguste acutae erectae vel vix patentes extus sparce sericeae et minute sparce glandulo-punctatae. Flores ca. 10 in capitulo; corollae lilaceae ca. 6.5 mm longae plerumque glabrae, tubis ca. 3 mm longis, faucibus ca. 0.5 mm longis, lobis ca. 3 mm longis ca. 0.4 mm latis apice minute pauce spiculiferis et glandulo-punctatis; thecae antherarum ca. 2 mm longae; appendices apicales antherarum ca. 0.35 mm longae et 0.23 mm latae. Achenia immatura ca. 1 mm longa dense sericeosetulifera obscure idioblastifera, raphidis elongatis; setae pappi albae ca. 5 mm longae; squamae exteriores anguste lineares ad 0.8 mm longae. Grana pollinis in diametro ca. 40 µm, typi D.

The species is unusual in the genus by the linear leaves and by the usually short and slender but distinct peduncles under the heads of the inflorescence.

Lepidaploa krukovii H. Rob., spec. nov. TYPE: BOLIVIA. La Paz: Prov. Larecaja, Copacabana (about 10 km S of Mapin), elev. 850-950 m, 8 Oct. - 15 Nov. 1939, Krukoff 11010 (HOLOTYPE: US; Isotype: NY).

Plantae scandentes mediocriter ramosae; caules fulvo-velutini. alterna, petiolis ad 2 cm longis; laminae in sicco chartaceae ellipticae 18-22 cm longae plerumque 4-7 cm latae base breviter acutae margine integrae apice anguste leniter acuminatae supra laeves minute pilosulae subtus dense tenuiter albo-sericeae, nervis secundariis leniter arcuatis utrinque ca. 13 subtus pallidae valde exsculptis. Inflorescentiae terminales multo ramosae et ramulosae, ramis et ramulis seriate cymosis, internodis dense sordide velutinis. Capitula plerumque in nodis singula sessilia longe campanulata 9-10 mm alta ca. 5 mm lata; bracteae involucri ca. 50 subimbricatae ca. 5-seriatae appressae anguste ovatae vel lineari-lanceolatae 2-7 mm longae 0.7-1.1 mm latae exteriores apice anguste acutae extus evanescentiter sericeo- vel arachnoideo-tomentellae interiores apice anguste obtusae vel mucronulatae extus superne sensim tomentosae. Flores ca. 22 in capitulo; corollae albae? ca. 7 mm longae, tubis ca. 3.5 mm longis, faucibus ca. 1.5 mm longis extus in tubis superioribus et faucibis pilosis, pilis plerumque setuliformibus biseriatis, lobis ca. 3 mm longis margine extus et intus omnino spiculiferis apice densius spiculiferis intus in zonis mediis distincte spiculiferis; thecae antherarum ca. 3 mm longae; appendices antherarum apicales ca. 0.7 mm longae 0.16 mm latae. Achenia ca. 3.5 mm longa dense sericeo-setulifera dense idioblastifera, raphidis sparsis elongatis; setae pappis albae ca. 6 mm longae apice vix latiores; squaniae exteriores 1.0-1.5 mm longae. Grana pollinis in diametro 38-40 µm, typi D

The species is named for B.A. Krukoff during whose 8th expedition to South

America the type was collected.

Lepidaploa krukovii is like L. lewisii H. Rob., described below, in belonging to the L. beckii H. Rob. group with spicules on the lateral margins of the corolla lobes. The present new species differs by the smoother upper leaf surfaces, the almost exclusively solitary heads at the nodes, the larger size of the heads, the setuliform hairs on the throats of the corollas, the spicules in a median zone inside of the corolla lobes and the white rather than yellowish pappus bristles. The pollen is different in the crosswalls in the colpi that seem complete or nearly complete and the total lack of polar lacunae. This Type D pollen seems independently derived from that in the group of Brasilian species including L. nitens (Gardn.) H. Rob.

Lepidaploa lewisii H. Rob., spec. nov. TYPE: BOLIVIA. La Paz: Inquisivi, "Abra de Alto Polea" - along the road between Alto Polea and Paqueloque where it crosses the pass, roadside evergreen woodlands, 16° 42' S, 67° 14' W, 2780 m, 5 June 1990, Marko Lewis 37356 (HOLOTYPE: US; Isotypes: LPB,MO). PARATYPES: BOLIVIA. La Paz: Inquisivi Prov. Same data as type, Marko

Lewis 37358 (LPB,MO,US); Inquisivi, At the bridge over the Río Khara (Inquisivi - Niguillas road), ca. 2 km NW of Licoma Pampa, subtropical forest, mostly secondary, 16° 48' S, 67° 13' W, 1750 m, 15 June 1988, Marko Lewis 88831 (LPB, MO, US).

Plantae suffruticosae reclinatae mediocriter ramosae; caules fulvo-velutini. Folia alterna, petiolis 0.5-1.0 cm longis; laminae subcoriaceae anguste ovatae 12-20 cm longae 2.5-5.0 cm latae base breviter acutae vel obtusae ad anguste subrotundatae margine integrae apice anguste acutae vel acuminatae supra dense subtiliter rugulosae minute sericeae subtus sublanulosae, nervis secundariis leniter arcuatis utrinque ca. 13 subtus valde exsculptis. Inflorescentiae terminales multo ramosae et ramulosae, ramis et ramulis seriate cymosis, internodis hirtellis vel velutinis, bracteolis subnullis vel foliiformibus ad 3 cm longis. Capitula sessilia plerumque in nodis singula aut bina late campanulata 7-8 mm alta et ca. 8 mm lata; bracteae involucri ca. 50 subimbricatae ca. 5-seriatae appressae anguste ovatae vel oblongo-lanceolatae 1-5 mm longae 0.7-1.0 mm latae exteriores apice acutae interiores apice anguste oblongae obtusae vel anguste rotundatae interdum reflexae extus leniter sericeae. Flores ca. 20 in capitulo; corollae albae vel lavandulo-tinctae 5.5-6.0 mm longae, tubis 2.5-3.0 mm longis glabris, faucibus ca. 1 mm longis glabris, lobis ca. 2.3 mm longis apice dense breviter spiculiferis extus solum subapice spiculiferis margine e basem in seriebus exterioribus et interioribus breviter spiculiferis; thecae antherarum ca. 2.3 mm longae; appendices apicales antherarum oblongo-ovatae ca. 0.5 mm longae 0.16 mm latae. Achenia ca. 1.8 mm longa sericeo-setulifera obscure vel non idioblastifera, raphidis elongatis; setae pappi flavescentes ca. 6.5 mm longae apice leniter latiores; squamae exteriores 0.6-1.0 mm longae. Grana pollinis in diametro ca. 40 µm, typi C.

The species is named for Marko Lewis, a bryologist in Bolivia who is now well

known for his collections of plants.

The new species is related to Lepidaploa beckii of Bolivia with similar spicules along the inner and outer edges of the corolla lobes. Lepidaploa lewisii differs by the less bullate upper leaf surfaces of the leaves, the narrower less rounded leaf bases and the heads solitary or only paired at most nodes of the seriate cymes.

Lepidaploa pseudomuricata H. Rob., spec. nov. TYPE: BRAZIL. Santa Catarina: Serra da Boa Vista, São José, 700 m, 12 Dec. 1960, capoeira, Reitz & Klein 10614 (HOLOTYPE: US; Isotypes: HBR,LP). PARATYPES: BRAZIL. Santa Catarina: Três Barras, Garuva, S. Francisco do Sul, 50 m, 28 Feb. 1956, capoeira, Reitz & Klein 6521 (HBR, LP, US).

Plantae herbaceae erectae ad 1.5 m altae; caules a 0.9 cm lati distincte valde exarati dense puberuli, medullis latis. Folia alterna saepe remota, petiolis nullis vel ca. 7 mm longis; laminae tenuiter herbaceae lanceolatae 5-11 cm longae 0.8-1.4 cm latae base acutae margine remote denticulatae apice anguste acutae vel leniter acuminatae supra evanescentiter albo-sericeae subtus distincte pallidiores dense tenuiter albo-sericeae; nervis secundariis utrinque ca. 7 valde ascendentibus. Inflorescentiae terminales et in axilis superioribus ascendentiter ramosae, ramis striatis puberulis, internodis distalioribus brevioribus, bracteolis foliiformibus lanceolatis 1.5-6.0 cm longis. Capitula in nodis solitaria sessilia 9-13 mm alta 8-12 mm lata; involucra late campanulata; bracteae involucri 30-35 subimbricatae 3-4-seriatae appressae ovatae vel lineari-lanceolatae 2-6 mm longae exteriores pungentes extus puberulae interiores apice breviter acutae extus perminute puberulae. Flores 20-25 in capitulo; corollae rosaceae ca. 12 mm longae plerumque glabrae, tubis ca. 5.5 mm longis, faucibus ca. 0.5 mm longis, lobis ca. 6 mm longis 0.5 mm latis apice pauce minute glanduliferis; thecae antherarum ca. 4 mm longae; appendices apicales antherarum ca. 0.8 mm longae 0.24 mm latae. Achenia ca. 2.7 mm longa dense setulifera, raphidis elongatis; carpopodia subglobosa; setae pappi albae 8.5-9.0 mm longae; squamae exteriores ca. 1.5 mm longae. Grana pollinis in diametro 50 μm, typi C.

Lepidaploa pseudomuricata has been treated as L. muricata in the treatment of the Vernonieae of Santa Catarina by Cabrera & Klein (1980), and it may be closely related to that species. The latter species, of the Rio de Janeiro area, differs by the narrower more terete stems, the hirsute stems and branches of the inflorescence, the more evenly capituliferous and arching branches of the inflorescence and the more spiniform and distally hirsute and spreading outer bracts of the involucre. The corollas of the latter are only ca. 9 mm long and the lobe tips have many small spicules instead of glands.

Lepidaploa sanmartinensis H. Rob., spec. nov. TYPE: PERU. San Martín: Prov. de Lamas, Trocha Agua Blanca - Desquite, alt. 250-300 m, 24 Julio 1950, Ferreyra 7962 (HOLOTYPE: US; Isotype: USM). PARATYPES: PERU. San Martín: Hills above Chazuta, W of Quebrada Chazuta, tropical wet forest and second growth on red clay, 6° 34′ S, 76° 12′ W, 200-300 m, 28 Aug. 1986, Knapp 8171 (MO,US).

Plantae frutescentes 4-5 m altae mediocriter ramosae; caules teretes pauce striati sparce appresse sericei. Folia alterna, petiolis 0.7-1.1 cm longis; laminae subcarnosae virides ovatae 6-17 cm longae 2-7 cm latae base obtusae vel breviter acutae margine remote minute serrulatae apice acuminatae supra sparse evanescentiter breviter sericeae subtus leniter pallidiores sparce breviter sericeae et glandulo-punctatae, nervis secundariis utrinque ca. 8 leniter arcuatis. Inflorescentiae terminales et in axillis superioribus multo ramosae. ramis ramosis cymosis, bracteolis supra basem obscuris. Capitula sessilia 10-12 mm alta 12-15 mm lata; involucra late campanulata; bracteae involucri 50-60 subimbricatae ca. 5-seriatae chartaceae ovatae vel anguste oblongae 2-7 mm longae 1.0-1.5 mm latae exteriores apice pungentes interiores apice rotundatae mucronatae leniter erosae extus leniter sericeae vel glabrae. Flores ca. 20 in capitulo; corollae lilaceae ca. 7.5 mm longae, tubis ca. 3 mm longis glabris, faucibus ca. 1.5 mm longis extus glabris vel perpauce pilosulis, lobis ca. 3 mm longis extus et intus spiculiferis; thecae antherarum ca. 3.1 mm longae in connectivis glanduliferae base distincte breviter caudatae, appendices apicales antherarum lanceolatae ca. 0.7 mm longae 0.22 mm latae glanduliferae. Achenia ca. 4 mm longa dense breviter setulifera et idioblastifera, raphidis minutis sparcis elongatis; setae pappi albae ca. 6.5 mm longae apice non

lateriores; squamae exteriores lineares 1.0-1.5 mm longae. Grana pollinis in diametro 45-47 µm, typi C.

Lepidaploa sannartinensis has a superficial resemblance to Dasyanthina H. Rob. and Quechualia H. Rob., especially Q. fulta (Griseb.) H. Rob., which occurs as far north as central Perú. The new species differs most obviously in the seriate-cymose inflorescence branches bearing sessile heads, but also differs microscopically in the lophate pollen. A distinctive feature of the new species is the spicules on both the inside and outside of the corolla lobes, a condition seen also in Dasyanthina. The spicules are unlike those in members of the L. beckii group of Bolivia in not occurring along the lobe margins. The species is unusual in Lepidaploa by the glands on the anther connectives and appendages.

Lessingianthus hatschbachii H. Rob., spec. nov. TYPE: BRAZIL. Minas Gerais: Serra do Cabral (mun. Várzea da Palma), alt. 1000 m, 12 Mar. 1995, Hatschbach & Silva 61792 (HOLOTYPE: MBM; Isotype: US).

Plantae frutescentes ad 1 m altae mediocriter ramosae; caules glabri minute pustulati. Folia alterna, petiolis subnullis vel 1 mm longis; laminae subcoriaceae oblongo-lanceolatae plerumque 3-7 cm longae 1-2 cm latae base obtusae margine minute serrulatae apice acutae supra glabrae in nervis et nervulis dense reticulatae micro-foveolatae subtus glabrae glandulo-punctatae leniter glaucescentes, nervis secundariis utrinque 10-12 arcuatis minume exsculptis. Inflorescentiae terminales pinnate ramosae apice et in ramis dense seriate cymosae, ramis bracteiferis, bracteolis foliiformibus oblongis 14-24 mm longis 8-14 mm latis. Capitula sessilia cylindrica 11-12 mm alta ca. 5 mm lata; bracteae involucri brunnescentes 40-45 subimbricatae ca. 5-seriatae lanceolatae 3-7 mm longae 1.0-1.5 mm latae apice anguste acutae sensim patentes extus glabrae. Flores ca. 10 in capitulo; corollae lilaceae ca. 8 mm longae extus glabrae, tubis ca. 4 mm longis, faucibus ca. 1 mm longis, lobis ca. 3 mm longis; thecae antherarum ca. 2.8 mm longae; appendices apicales antherarum anguste ovatae ca. 0.7 mm longae 0.25 mm latae. Achenia ca. 3 mm longa dense setulifera et idioblastifera; setae pappi pallide flavescentes ca. 6.5 mm longae apice leniter latiores. Grana pollinis in diametro ca. 45 µm, typi B.

Lessingianthus hatschbachii is distinct in its oblong-lanceolate essentially glabrous leaves with minutely serrulate margins, and its narrowly acute involucral bracts with somewhat spreading tips.

Minasia splettiae H. Rob., spec. nov. TYPE: BRAZIL. Minas Gerais: estrada Diamantina - Conselheiro Mata, 20.3 km depois do asfalto, 18° 20′ S, 43° 53′ W, alt. ca. 1200 m, 23 Sept. 1994, Splett 625 (HOLOTYPE: US; Isotypes: BONN, UB).

Plantae herbaceae perennes dense rosulatae; xylopodia obconica; caules Folia in basibus laterioribus persistentibus extus hirsutis valde aggregata, laminis linearibus vel filiformibus ad 10 cm longis 1-2 mm latis supra et subtus dense appresse albo-tomentosis, pilis T-formibus, nervis primariis solum distinctis. Inflorescentiae 1-3 erectae 0.15-0.50 m altae non ramosae vel superne uniramosae dense appressae sordide vel fulve tomentosae pauce bracteoliferae, bracteolis filiformibus 1-3 cm longis plerumque in partibus inferioribus inflorescentium dispositis. Capitula solitaria vel 2-4 aggregata 1.0-1.2 cm alta 0.8-1.0 cm lata; bracteae involucri ca. 40 subimbricatae ca. 5-seriatae oblongae vel lineares 1.5-5.0 mm longae 1.0-1.5 mm latae distaliter albo-tomentosae apice patentes dense fimbriatae. Flores 12-15 in capitulo; corollae 8.5 mm longae albae vel roseo-tinctae extus plerumque sparse glanduliferae, tubis ca. 4 mm longis, faucibus ca. 1 mm longis, lobis ca. 3.5 mm longis ca. 0.8 mm latis extus distaliter dense glandulo-punctatis et T-formiter pilosis; thecae antherarum ca. 3.2 mm longae base breviter caudatae; appendices apicales antherarum ca. 0.7 mm longae. Achenia ca. 3 mm longa sericeo-setulifera sparce idioblastifera base pauce glandulo-punctata; setae pappi roseaceae 1.5-6.0 mm longae longiores distaliter leniter lateriores. Grana pollinis in diametro ca. 50 µm, typi A.

The species is named for the collector, Stephanie Plett, of the Botanisches Institut, Rheinische Friedrich-Wilhelms-Universität Bonn, Bonn, Germany.

The *Eriocaulon*-like specimen with its linear or filiform leaves and small heads cannot be simply a depauperate form of the larger members of the genus *Minasia* that occur in the same geographical area. The specimen is cited from the "Cerrado, campos de areas quartzosas" on sand.

Stilpnopappus pantanalensis H. Rob., spec. nov. TYPE: BRAZIL. Mato Grosso do Sul: Mun. Corumbá, Fazenda Alegria, Nhecolândia, pantanal, 20 Aug. 1991, Cervi, et al. 3229 (HOLOTYPE: MBM; Isotype: US). PARATYPES: BRAZIL. Mato Grosso do Sul: Estr. para Nhecolândia, pantanal, 29 Jan 1979, Oliveira 467 (RJ,US); Fda. Nhumirim (Mun. Corumbá, solo arenoso inundá vel do pantanal, 11 June 1994, Hatschbach, Pott, & Silva 60918 (MBM,US).

Plantae herbaceae prostratae mediocriter vel dense ramosae caulis longe vel breviter albo-sericei. Folia alterna non vel breviter petiolata; laminae lineares 2-8 cm longae 0.2-0.7 cm latae base angustiores margine integrae apice breviter acutae supra sparce pilosulae subtus dense albo-tomentosae, nervis primariis solum distinctis. Inflorescentiae axillares ascendentes monocephalae, pedunculis 5-10 cm longis pallide sericeibus. Capitula 1.0-1.2 cm alta 1.2-1.5 cm lata; bracteae involucri basilares foliosae et lineares vel in apicem foliosae 0.5-2.0 cm longae extus dense albo-tomentosae; bracteae involucri interiores 20-25 chartaceae 2-3-seriatae leniter inaequilongae oblongae 3-5 mm longae extus glandiferae; glandulis brevibus cylindraceis, tubis angustis ca. 4.5 mm longis, faucibus ca. 1 mm longis, lobis ca. 4.5 mm longis 0.8-1.0 mm latis; thecae antherarum ca. 1.3 mm longae base rotundatae; appendices apicales antherarum ellipticae ca. 0.35 mm longae 0.18 mm latae; basi stylorum

noduliferi. Achenia ca. 1.8 mm longa setulifera et glandulifera, raphidis quadratis vel breviter oblongis; squamae pappi biseriatae, squamis exterioribus ellipticis 1.8-2.5 mm longis, squamis interioribus subulatis 2.8-3.5 mm longis. Grana pollinis in diametro ca. 45 µm echinolophata triporata.

The new species is similar to Stilpnopappus trichospiroides Mart. ex DC., but has a more prostrate habit and linear leaves. Stilpnopappus pantanalensis is found in the pantanal region of Mato Grosso do Sul and may eventually be found in nearby eastern Paraguay.

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